

Field Effect Transistor

Silicon N Channel MOS Type (τ -MOS III.5)

High Speed, High Current Switching, DC-DC Converter,
Chopper Regulator and Motor Drive Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 0.78\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 4.8S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 500V$
- Enhancement-Mode
 - $V_{th} = 2.0 \sim 4.0V$ @ $V_{DS} = 10V$, $I_D = 1mA$

Absolute Maximum Ratings ($T_a = 25^\circ C$)

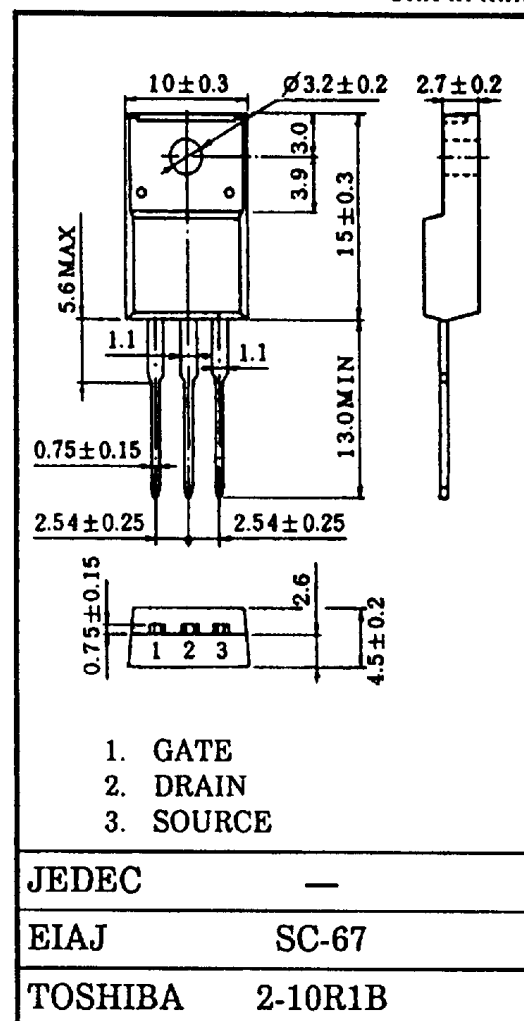
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	500	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	500	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D	7
	Pulse	I_{DP}	28
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	45	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 ~ 150	$^\circ C$

Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{(ch-c)}$	2.77	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{(ch-a)}$	62.5	$^\circ C/W$

This transistor is an electrostatic sensitive device. Please handle with care.

Unit in mm



Weight : 1.9g

2SK1805

Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 500V, V_{GS} = 0V$	-	-	300	μA
Drain-Source Breakdown Voltage		$(V_{BR})_{DSS}$	$I_D = 10mA, V_{GS} = 0V$	500	-	-	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	2.0	-	4.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 4A, V_{GS} = 10V$	-	0.78	0.85	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 4A$	3.0	4.8	-	S
Input Capacitance		C_{iss}	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	-	870	1100	pF
Reverse Transfer Capacitance		C_{rss}		-	75	140	
Output Capacitance		C_{oss}		-	210	300	
Switching Time	Rise Time	t_r	<p>$V_{GS} = 10V$ $I_D = 4A$ V_{OUT} $R_L = 50\Omega$ $V_{IN} : t_r, t_f < 5ns, V_{DD} = 200V$ $Duty \leq 1\%, t_w = 10\mu s$</p>	-	30	60	ns
	Turn-on Time	t_{on}		-	60	120	
	Fall Time	t_f		-	35	70	
	Turn-off Time	t_{off}		-	100	200	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400V, V_{GS} = 10V,$ $I_D = 7A$	-	30	38	nC
Gate-Source Charge		Q_{gs}		-	13	-	
Gate-Drain ("Miller") Charge		Q_{gd}		-	17	-	

Source-Drain Diode Ratings and Characteristics (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	-	-	-	7	A
Pulse Drain Reverse Current	I_{DRP}	-	-	-	28	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 7A, V_{GS} = 0V$	-	-	-1.8	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 7A, V_{GS} = 0V$	-	360	-	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR}/dt = 100A/\mu s$	-	2.8	-	μC

